MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, SCHOTTKY TTL,
NAND GATES, MONOLITHIC SILICON

This amendment forms a part of MIL-M-38510/70B, dated
22 November 1985, and is approved for use by all
Departments and Agencies of the Department of Defense.

PAGE 1

1.2.3, add the following new case outlines:

"2   C-2 (20-terminal, .350" x .350"), square chip carrier package
X   C-2A (20-terminal, .350" x .350"), square chip carrier package"

PAGE 2

1.3, thermal resistance, delete and substitute:

"Thermal resistance, junction-to-case (Θ_{JC}):
    Cases A, B, C, D, E, F, X, and 2 - - - - - - - (See MIL-M-38510, appendix C)"

PAGE 4

* TABLE I, propagation delay time, high-to-low level, t_{PHL}, delete and substitute as follows:

"

Propagation delay time, high-to-low level	t_{PHL}	C_L = 50 pF, R_L = 280Ω V_{CC} = 5.0 V	01, 03, 05, 06	2	9	ns
			02, 04, 07	2	14	ns
			08	2	10	ns
			09	2	12	ns
			10 1/	2	10.5	ns

"

The attached insertable replacement pages listed below are replacements for stipulated pages. When the new pages have been entered in the document, insert the amendment as the cover sheet to the specification.

Replacement page	Page replaced
5	5
6	6
7	7
8	8

PAGE 15

FIGURE 4, input waveform: Delete "10%" and substitute "0.7 V"; delete "90%" and substitute "2.7 V".

PAGE 16

FIGURE 5, input waveform: Delete "10%" and substitute "0.7 V"; delete "90%" and substitute "2.7 V".

PAGE 17

FIGURE 5, output control (low-level enabling) waveforms for standard load: Delete "10%" and substitute "0.7 V"; delete "90%" and substitute "2.7 V".

FIGURE 5, output control (low-level enabling) waveforms for alternate load: Delete "10%" and substitute "0.7 V"; delete "90%" and substitute "2.7 V".

PAGE 18

TABLE III, device type 01, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}

"

TABLE III, test number 9, pins 4A and 4B: Delete "2.0 V" and substitute "GND".

TABLE III, test number 12, pins 4A and 4B: Delete "ս" and substitute "2.0 V".

PAGE 19

TABLE III, device type 01, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}

"

Following footnote 1/, add the following: (alter change made by amendment 1)

"2/ Case 2 and X pins not designated are NC."

PAGE 21

TABLE III, test number 47, maximum limits column: Delete "11.0" and substitute "11.5".

PAGE 22

TABLE III, device type 03, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}

"

PAGE 23

TABLE III, device type 03, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V_{CC}

" .

Following footnote 1/, add the following: (alter change made by amendment 1)

"2/ Case 2 and X pins not designated are NC."

PAGE 26

TABLE III, device type 05, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V_{CC}

"

PAGE 27

TABLE III, device type 05, terminal designations, delete and substitute as follows:

"

Cases														
2,X 2/	2	3	4	6	8	9	10	12	13	14	16	18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V_{CC}

"

Following footnote 1/, add the following: (alter change made by amendment 1)

"2/ Case 2 and X pins not designated are NC."

PAGE 28

TABLE III, device type 06, terminal designations, delete and substitute as follows:

"
Cases														
2,X 2/	2	3		6	8	9	10	12	13	14		18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V_{CC}
"

PAGE 29

TABLE III, device type 06, terminal designations, delete and substitute as follows:

"
Cases														
2,X 2/	2	3		6	8	9	10	12	13	14		18	19	20
A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V_{CC}
"

Following footnote 1/, add the following: (alter change made by amendment 1)

"2/ Case 2 and X pins not designated are NC."

PAGE 34

TABLE III, device type 09, terminal designations, delete and substitute as follows:

"
Cases																	
2,X 2/	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
E,F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A	B	C	D	E	F	G	GND	Y	H	I	J	K	L	M	V_{CC}
"

PAGE 35

TABLE III, device type 09, terminal designations, delete and substitute as follows:

"
Cases																	
2,X 2/	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
E,F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A	B	C	D	E	F	G	GND	Y	H	I	J	K	L	M	V_{CC}
"

* TABLE III, device type 09, subgroup 9, t_{PHL}, test number 71, maximum limits column: Delete "9.0" and substitute "11.0".

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PAGE 36

TABLE III, device type 09, terminal designations, delete and substitute as follows:

"

Cases																	
2,X 2/	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
E,F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A	B	C	D	E	F	G	GND	Y	H	I	J	K	L	M	V_{CC}

"

* TABLE III, device type 09, subgroup 10, t_{PHL}, test number 97, maximum limits column: Delete "10.0" and substitute "12.0".

Following footnote 1/, add the following: (alter change made by amendment 1)

"2/ Case 2 and X pins not designated are NC."

PAGE 40

4.2a(1), delete and substitute as follows:

"(1) Test condition D or E, using the circuit shown on figure 3, or equivalent. Test condition A and the applicable burn-in circuit shall be allowed with the approval of the qualifying activity."

4.4.3b, delete in its entirety.

PAGE 41

4.4.3c(1), delete and substitute as follows:

"(1) Test condition D or E, using the circuit shown on figure 3, or equivalent. Test condition A and the applicable burn-in circuit shall be allowed with the approval of the qualifying activity."

The margins of this amendment are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

CONCLUDING MATERIAL

Custodians:
  Army – ER
  Navy – EC
  Air Force – 17

Review activities:
  Army – AR, MI
  Navy – OS, SH, TD
  Air Force – 19, 85, 99
  DLA – ES

User activities:
  Army – SM
  Navy – AS, CG, MC

Preparing activity:
  Air Force – 17

Agent:
  DLA – ES

(Project 5962-1344)

3.2.1 <u>Logic diagrams and terminal connections</u>. The logic diagrams and terminal connections shall be as specified on figure 1.

3.2.2 <u>Truth tables and logic equations</u>. The truth tables and logic equations shall be as specified on figure 2.

3.2.3 <u>Schematic circuits</u>. Schematic circuits shall be submitted to the preparing activity prior to inclusion of a manufacturer's device in the specification and shall be submitted to the qualifying activity and agent activity (DESC-ECS) as a prerequisite for qualification. All qualified manufacturers' schematics shall be maintained by the agent activity and will be available upon request.

3.2.4 <u>Case outlines</u>. The case outlines shall be as specified in 1.2.3.

3.3 <u>Lead material and finish</u>. The lead material and finish shall be in accordance with MIL-M-38510 (see 6.4).

3.4 <u>Electrical performance characteristics</u>. Unless otherwise specified, the electrical performance characteristics are as specified in table I, and apply over the full recommended case operating temperature range.

3.5 <u>Electrical test requirements</u>. The electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.6 <u>Marking</u>. Marking shall be in accordance with MIL-M-38510 and 1.2 herein. The "JAN" or "J" certification mark shall not be used for device type 10.

3.7 <u>Microcircuit group assignment</u>. The devices covered by this specification, except device type 10 for which qualification requirements have been removed, shall be in microcircuit group number 8 (see MIL-M-38510, appendix E).

TABLE II. <u>Electrical test requirements</u>.

MIL-STD-883 test requirements	Subgroups (see table III)	
	Class S devices 1/	Class B devices
Interim electrical test parameters (method 5004)	1	1
Final electrical test parameters (method 5004)	1*, 2, 3, 9 10, 11	1*, 2, 3, 9
Group A electrical tests (method 5005)	1, 2, 3, 9 10, 11	1, 2, 3, 9 10, 11
Group B electrical tests 2/ (method 5005, subgroup 5)	1, 2, 3, 9 10, 11	N/A
Group C end-point electrical parameters (method 5005)	N/A	1, 2, 3
Group D end-point electrical parameters (method 5005)	1, 2, 3	1, 2, 3

* PDA applies to subgroup 1 (see 4.2c).
1/ Class S product assurance class is not applicable for device type 10.
2/ Group B test requirements shall be applied only to device types 01, 02, 03, 04, 05, 06, 07, 08, 09.
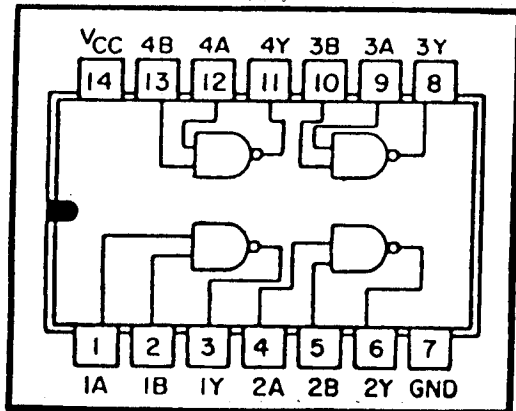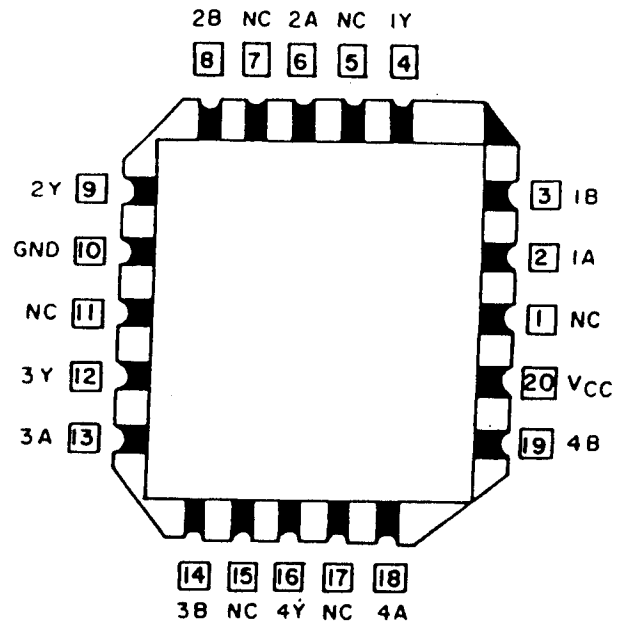
Text continues on page 40.

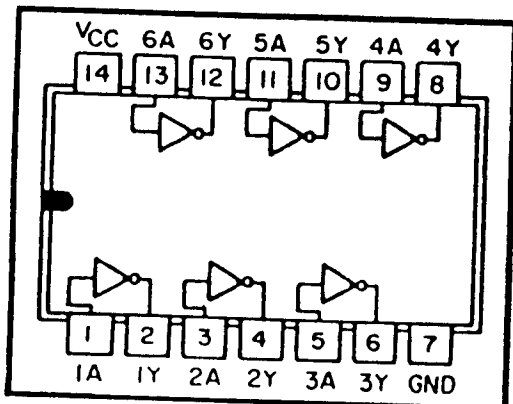Device types 01 and 02

Cases A, B, C, and D

Device type 01

Cases 2 and X

Device types 03 and 04

Cases A, B, C, and D

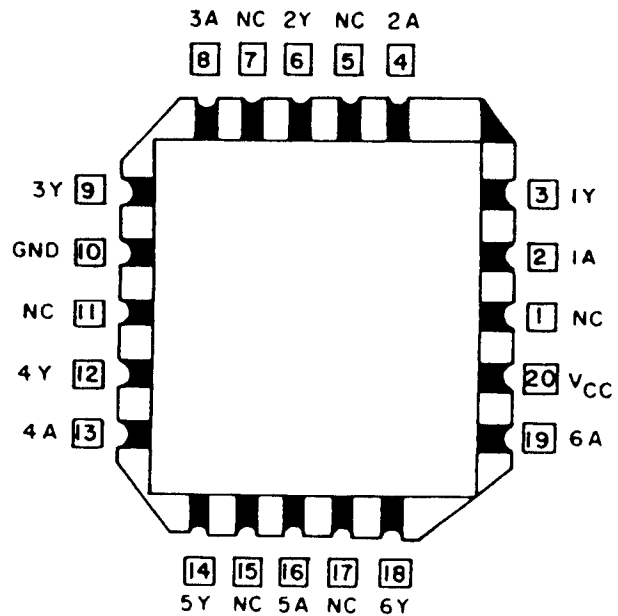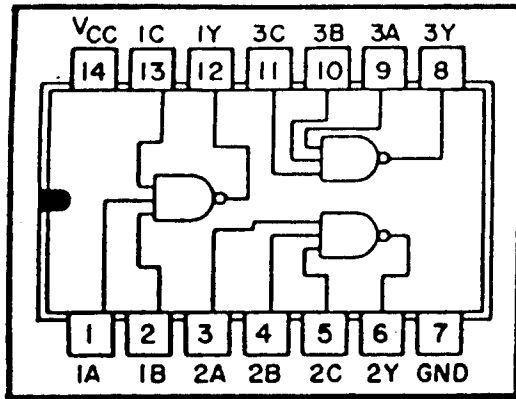Device type 03

Cases 2 and X

FIGURE 1. Logic diagram and terminal connections (top view).

Supersedes page 6 of MIL-M-38510/70B of 22 November 1985.
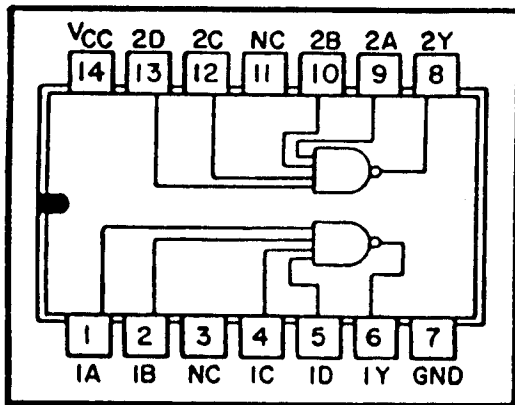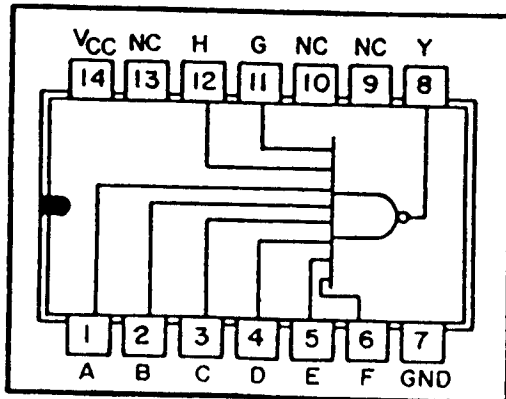
6

Device type 05

Cases A, B, C, and D
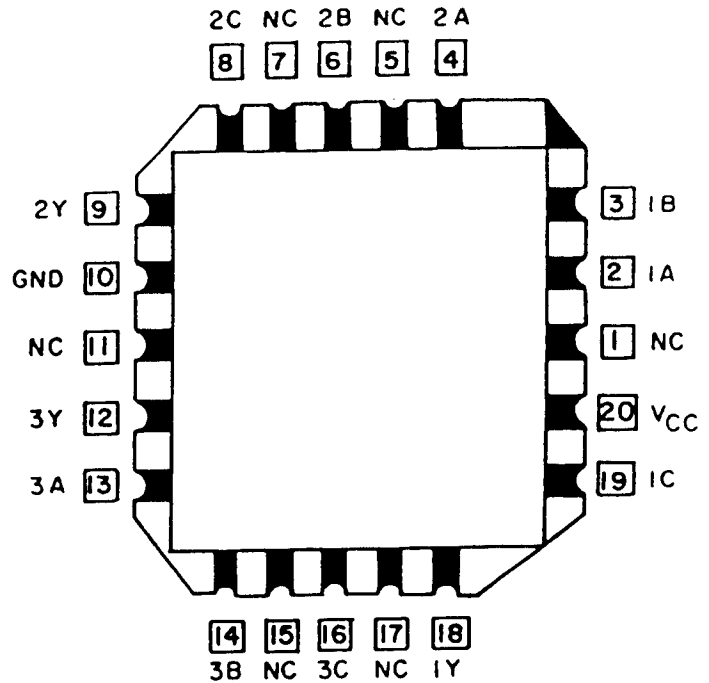

Device types 06 and 07

Cases A, B, C, and D

Device type 08

Cases A, B, C, and D

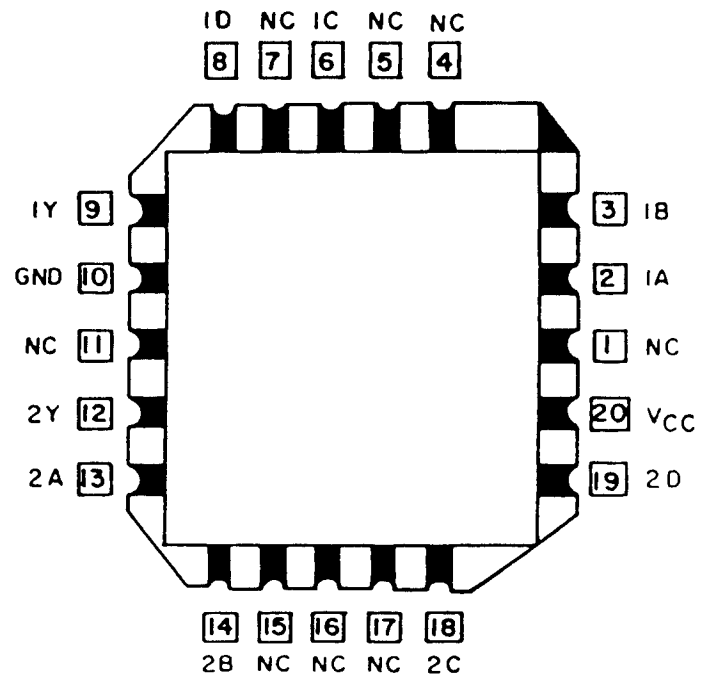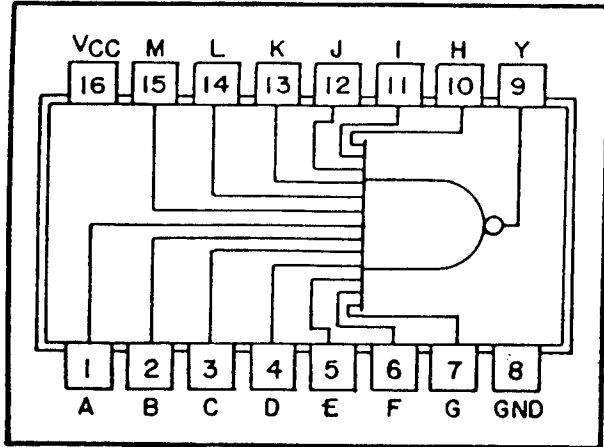Device type 05

Cases 2 and X

Device type 06

Cases 2 and X

FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

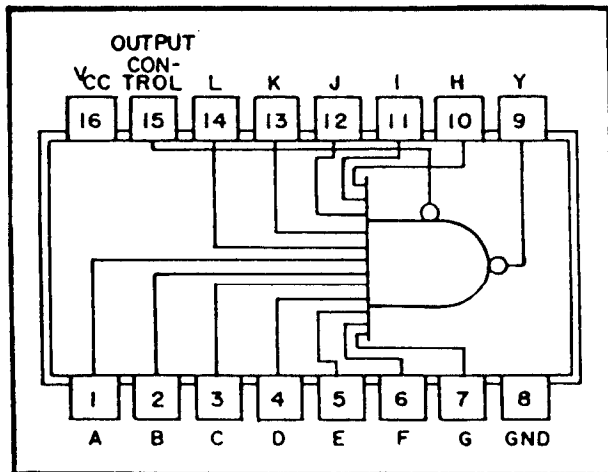Supersedes page 7 of MIL-M-38510/70B of 22 November 1985.
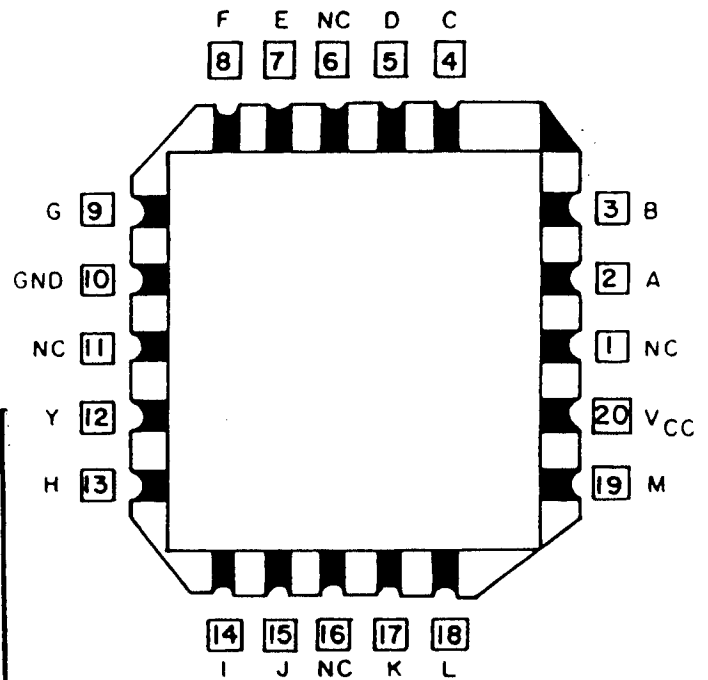
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Device type 09

Case E and F

Device type 09

Cases 2 and X

Device type 10 1/

Cases E and F

1/ Qualification requirements removed for this device type.

FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

Supersedes page 8 of MIL-M-38510/70B of 22 November 1985.